UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,473	08/23/2006	Yoshiyuki Wada	MAT-8888US	9698

52473 7590 03/10/2009

RATNERPRESTIA
P.O. BOX 980
VALLEY FORGE, PA 19482

EXAMINER	
NGUYEN, DONGHAI D	
ART UNIT	PAPER NUMBER
3729	
MAIL DATE	DELIVERY MODE
03/10/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,473	WADA ET AL.	
	Examiner	Art Unit	
	DONGHAI D. NGUYEN	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) *7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on December 2, 2008 has been considered and made of record. Claims 1-8 are pending.

Election/Restrictions

2. Newly submitted claims 7 and 8 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the newly added claims (7 and 8) and the original claims (1-6) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because original claims (1-6) do not require a continuous layer of resist film of the new claims (7 and 8). The subcombination has separate utility such as "applying a continuous layer of resist film which covers at least a portion of each electrode adjacent to the space formed between the at least two electrodes and covers the space between the at least two electrodes so that the continuous layer of resist film extends between the at least two electrodes".

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 7 and 8 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,402,013 to Abe et al in view of US Patent 5,726,861 to Ostrem and vice versa.

Regarding claims 1 and 3, Abe et al disclose an electronic component mounting method for mounting the electronic component on a substrate by soldering a connection terminal disposed at both ends of a main body of the electronic component to a pair of electrodes provided on the substrate (see Col. 4, lines 36-38), comprising: an adhesive supplying step of supplying a thermosetting adhesive mixing solder particles to the substrate (see Col. 4, lines 20-24); a component mounting step of mounting the electronic component (chip) on the substrate after the adhesive supplying step (Col. 4. line 24); and a heating step of heating the substrate after the component mounting step (Col. 4, line 25), wherein the adhesive supplying step is characterized by supplying the adhesive to the electrode (see Col. 4, lines 23-24), the component mounting step is characterized by fitting the connection terminal to the adhesive supplied on the electrode (see Col. 4, line 24), and the heating step is characterized by forming a solder junction by bonding the connection terminal and electrode by fusing the solder particles in the adhesive supplied to the electrode, and also forming an adhesion reinforced part for fixing the electronic component to the substrate by heating and curing the adhesive by sealing the inside of the

adhesive with solder part (see Col. 4, lines 31-38). Abe et al do not disclose supplying the adhesive to an adhesion reinforcing portion determined between the pair electrodes on the substrate for covering the reinforcing electrode provided in a portion separated from the electrodes on the substrate and fitting the electronic component to the adhesive supplied in the adhesion reinforcing portion to fix the main body to the substrate. Ostrem teaches the step of supplying the adhesive (113) to an adhesion reinforcing portion (111) determined outside of the electrode (105) on the substrate (101) for covering the reinforcing electrode provided in a portion separated from the electrodes on the substrate (see Fig . 1) and fitting the electronic component (117) to the adhesive supplied in the adhesion reinforcing portion to fix the main body (117) to the substrate (101) for maximizing the fatigue life of the surface mount component soldered connection and providing a compliant interconnect that can withstand repeated thermal excursions (see Col. 4, lines 9-14). Therefore, it would have been obvious to one having ordinary skill in the art the time the invention was made to modify the invention of Abe et al by supplied the adhesive in the adhesion reinforcing portion as taught by Ostrem for maximizing the fatigue life of the surface mount component soldered connection and providing a compliant interconnect that can withstand repeated thermal excursions.

Regarding claims 4 and 6, Abe et al disclose an electronic component mounting structure for mounting an electronic component having a connection terminal disposed at both ends of a main body on a substrate with a pair of electrodes by a thermosetting adhesive mixing solder particles, comprising: a soldering unit of bonding the pair of the electrodes and the connection terminal formed by fusing and solidifying of the solder particles in the adhesive supplied in the

electrode (see Col. 4, lines 20-38). Abe et al do not disclose an adhesion reinforcing unit that covers the reinforcing electrode provided in a portion separated from the pair of electrodes on the substrate. Ostrem teaches the adhesion reinforcing unit (113) being formed in the adhesion reinforcing portion separated from the electrode portion (105) on the substrate (101) that covers the reinforcing electrode provided in a portion separated from the pair of electrodes on the substrate (see Fig. 1) to fix the main body (117) to the substrate (101) for maximizing the fatigue life of the surface mount component soldered connection and providing a compliant interconnect that can withstand repeated thermal excursions (see Col. 4, lines 9-14). Therefore, it would have been obvious to one having ordinary skill in the art the time the invention was made to modify the invention of Abe et al by utilized the adhesion reinforcing unit as taught by Ostrem for maximizing the fatigue life of the surface mount component soldered connection and providing a compliant interconnect that can withstand repeated thermal excursions.

In alternative, Ostrem disclose every limitation of claims 1, 3-4 and 6, except for the adhesive having a thermosetting adhesive mixing with solder particles. Abe et al teach the adhesive comprises mixture of thermosetting adhesive and solder particles (Col. 4, lines 20-23) for increasing the joining strength of electronic component to the board without require cleaning after soldering (see Col. 1, lines 58-67). Therefore, it would have been obvious to one having ordinary skill in the art the time the invention was made to modify the invention of Ostrem by utilized the adhesion as taught by Abe et al for increasing the joining strength of electronic component to the board without require cleaning after soldering, underfilling or resin molding.

5. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe/Ostrem or Ostrem/Abe et al as applied above, and further in view of US Patent 6,521,997 to Huang et al.

Abe/Ostrem or Ostrem/Abe et al as applied and relied above do not disclose the adhesion reinforcing portion partly overlaps with the plural electrodes, and the portion separated from the electrodes is set on a concave resist film. Huang et al teach the adhesion (14 and 17) partly overlaps with the plural electrodes (12), and the portion separated from the electrodes is set on a concave resist film (11), and the solder part is held in the concave portion (see Figs. 3 and 4) for preventing the occurrence of short circuit between electrical component and solder electrodes (see Col. 2, lines 21-22). Therefore, it would have been obvious to one having ordinary skill in the art the time the invention was made to further modify the invention of Abe/Ostrem or Ostrem/Abe et al by utilized the configuration of electrodes, resist film and adhesive as taught by Huang et al for preventing the occurrence of short circuit between electrical component and solder electrodes.

Response to Arguments

6. Applicant's arguments filed December 2, 2008 have been fully considered but they are not persuasive. Applicants argue that "Ostrem does not disclose forming an adhesion reinforced part for fixing the main body to the substrate" (see "Remarks" 6, 1st paragraph). The Examiner disagrees because Ostrem discloses an adhesion reinforced part (113) for fixing the main body (117) of the component (103) to the substrate (101, see Fig. 1 and col. 2, line 59-65).

In response to applicant's argument that Ostrem discloses forming an adhesion part for controlling solder height of a surface mounting device (see "Remarks" page 5, last paragraph), the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONGHAI D. NGUYEN whose telephone number is (571)272-4566. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Bryant can be reached on (571)-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DN
March 5, 2009

/Donghai D. Nguyen/
Primary Examiner, Art Unit 3729